

Atty Dkt. No.: 10992125-2
USSN: 10/036,999

REMARKS

In view of the amendments above and remarks put forth below, reconsideration and allowance are respectfully requested.

Claims 7 has been amended to correct a typographical error and to clarify that adjustment to the interrogating light power occurs during scanning of the scan line. Support for this amendment can be found in the specification on page 12, lines 26-31. As no new matter has been added by way of these amendments, the Applicants respectfully request entry thereof by the Examiner.

REJECTION UNDER 35 U.S.C. §102

Claims 1, 5, 7, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated over Lehman et al. (US 5,237,172).

As stated in MPEP § 2131:

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."
Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In making this rejection, the Office Action states that even though Lehman et al is drawn to scanning documents, the claims and specification of the subject application fails to define the array, package, addressable array, feature or moieties so as to exclude any elements found in the scanning art.

While the Applicants maintain that the claimed invention, when read in light of the specification, is clearly distinguishable over Lehman et al., the Applicants have amended the claims such that the features of the array being scanned in the claimed invention are biopolymeric features. Support for these amendments can be found throughout the specification, specifically: page 1, lines 4-6; page 7, lines 1-28; and Figures 1-3.

In light of this, the Applicants submit that Lehman et al. fails to anticipate the claimed invention as amended because it is not drawn to scanning arrays of biopolymeric features of different moieties. As noted above, Lehman et al. is drawn to scanning documents, such as a letter or photographic slide (see col. 1, lines 7-10 of Lehman et al.) which are not arrays of biopolymeric features of different moieties.

Therefore, because Lehman et al. fails to teach each and every element of the claimed invention, the Applicants respectfully request withdrawal of the rejection of Claims 1, 5, 7, 10 and 11 under 35 U.S.C. 102(b).

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REJECTION UNDER 35 U.S.C. §103

Claims 1-5 and 18-20 are rejected under 35 U.S.C. 103(a) as unpatentable over Bengtsson (US 6,078,390) in view of Rava et al. (US 5,874,219).

As stated in MPEP § 2142:

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Independent Claim 1 specifies a method that includes decreasing power of the interrogating light for a first site on the array package during scanning wherein the first site is outside an area occupied by the array. In other words, the interrogating light power is decreased at a site that is not within the addressable array area.

In making this rejection, the Examiner refers to col. 8, lines 11-17 as teaching decreasing interrogating light power for a first site on the array package during the array scanning. The Examiner goes on to cite col. 6 lines 23-43, col. 8 line 17, col. 7 lines 23-25 and 32-35, and col. 6 line 1 to col. 7 line 60 as disclosing that the first site is outside the array area.

However, the Applicants submit that the cited passages referred to by the Examiner fail to disclose decreasing power of the interrogating light for a first site on the array package during scanning wherein the first site is outside an area occupied by the array.

In col. 8 lines 11-17, Bengtsson et al. discuss low resolution scanning operations. The Applicants wish to draw the Examiner's attention to the lines immediately following those cited (i.e., lines 17-23) which state that the lasers are turned off for a fraction of the scanning of "each element, or dot, in the scan line". These elements, or array features, are necessarily part of the array and as such are within the array area. Therefore, this passage makes it clear that the lasers are being intermittently powered off and on while scanning the array area, which is not what is claimed in the subject invention. The claimed invention is drawn to reducing the interrogating light power at a first site that is outside the array area.

Further, a careful reading of col. 6 lines 23-43 reveals that this section makes no mention at all of decreasing interrogating light power, let alone at a first site outside the array area. Rather, this section is drawn to selection of a calibration area that is within the array area. Specifically, this passage clearly states that the calibration area "may be the entire micro-array" (col. 6, line 24-25) or that the calibration area may instead be "some portion of the array" (col. 6, line 25), both of which are within the array area. Therefore, even if this section mentioned laser power reduction, it would

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only occur within the array area.

Likewise, col. 7 lines 23-25 and 32-35 also make no mention at all of decreasing interrogating light power, let alone at a first site outside the array area. These passages are drawn to the selection of the scan lines used for calibration scanning of the calibration area. Again, all calibration scanning in Bengtsson et al. occurs within the array area.

Finally, the entirety of cols. 6 and 7 fail to disclose decreasing interrogating light power at a first site outside the array area as is claimed. These sections are drawn to low resolution scans for locating the array and for calibration. As mentioned above, the area for calibration is clearly within the array area, and thus any interrogating light power adjustment during a calibration scan happens within the array area. Furthermore, there is no mention of decreasing the power of the interrogating light during array location scanning, let alone at a first site outside the array area.

Accordingly, for at least this reason, Bengtsson et al. do not teach or suggest a method that includes decreasing power of the interrogating light for a first site on the array package during scanning wherein the first site is outside an area occupied by the array.

Independent Claim 5 specifies a method in which the interrogating light power is altered based on the signal emitted from a first site when the interrogating light initially illuminates the first site. In other words, Claim 5 specifies that adjustment to the interrogating light power occurs during the process of scanning the scan line, not after completing the scanning of the scan line. This method allows power to be corrected before the interrogating light contacts the remainder of the feature so that useful data can still be obtained from that feature.

In support of this rejection, the Examiner relies on col. 5, lines 43-47 and lines 49-64 of Bengtsson et al. which the Examiner asserts teaches that power is altered based on the signal detected from the interrogated area. However, the Applicants respectfully submit that Bengtsson et al. does not teach or suggest that the power is altered based on the signal emitted from the first site before completion of scanning the scan line as is claimed in Claim 5. Indeed, as clearly shown in Figure 4, element 408, the interrogating light power is only adjusted in the calibration scan after completion of scanning a scan line.

Independent Claim 18, and Claims 2-4 and 19-20 that depend therefrom, specify altering power of the interrogating light for a first site based on location of the first site or on a determination that the emitted signal from the first site will be outside a predetermined intensity range absent the altering, wherein the interrogating light power is altered during a row scan of the interrogating light.

In support of this rejection, the Examiner refers to Bengtsson at col. 8, lines 11-23 which read:

Referring now to FIG. 5, a system 11 optionally includes a power modulator 500 that controls

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laser excitation sources 12a and 14a, to essentially turn the lasers 12 and 14 off for some fraction of the time that the system is scanning across a scan line. The system thus performs low-resolution scanning on a per-scan-line basis, that is, pixel-by-pixel, as well as over the calibration area. Specifically, the system turns off the lasers for a fraction of the scanning of each element, or dot, in the scan line. As discussed, the system need not have determined the locations of the individual elements in the micro-array, as long as the width, or diameters, of the elements are known. The system then turns the lasers 12 and 14 off for times that translate to a fraction of the width of each of the elements.

If the lasers are turned on and off, the system determines if N consecutively acquired pixels are saturated in a given scan line, since N adjacent pixels may not be acquired. Similarly, the system corrects the attenuation based on the M brightest consecutively acquired pixels. (emphasis added)

As can be seen from this passage, the turning off of the lasers is not based on the locations of the individual elements of the micro-array (first paragraph above, in bold). In addition, while Bengtsson et al. further describes the attenuation based on the brightest acquired pixels, this is not performed during a row scan as specified in the subject claims. Specifically, the determination of saturation is based on an analysis of a completed scan line and thus such a determination and subsequent attenuation can only be performed after a line has been completely scanned (see Figure 4, element 408 as discussed above). Accordingly, it is clear that the passage cited by the Examiner does not teach or suggest that the power is turned off based on either (1) location of the first site, or (2) on a determination that the emitted signal from the first site will be outside a predetermined intensity range absent the altering, wherein the power is turned off during a row scan of the interrogating light.

The Examiner has cited Rava et al. for its asserted teaching of a method for scanning an array package with multiple addressable features that finds use in high throughput assays. However, Rava et al. fail to make-up for the deficiencies of Bengtsson et al. detailed above (i.e., decreasing interrogating light power at a first site outside the array area and adjusting the interrogating light power during scanning a scan line).

Therefore, for at least the reasons described above, Claims 1-5 and 18-20 are patentable over Bengtsson et al. in view of Rava et al. and as such, the Applicants respectfully request that this rejection be withdrawn.

Claims 7-11 are rejected under 35 U.S.C. 103(a) as unpatentable over Bengtsson et al. (US 6,078,390) in view of Rava et al. (US 5,874,219) and Lehman et al. (US 5,237,172).

As currently amended, independent Claim 7 and dependent Claims 8-11 specify a method in which prior to scanning, an interrogating light power is calibrated versus a control signal characteristic from a light system which provides the interrogating light of a power which varies in response to the control signal characteristic. Following this step, the array package is scanned and during the scan the interrogating light power is altered based on the location of a first site or on a

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determination that the emitted signal from the first site will be outside a predetermined range. As with Claim 18 (discussed above), the interrogating light power is altered during a row scan of the interrogating light and not after the scanning of the scan line is complete.

Therefore, as discussed above, Bengtsson et al. and Rava et al. fail make Claims 7-11 obvious because they fail to teach or suggest altering the interrogating light power during the scanning of the scan line. As Lehman et al. is cited solely for its teaching of pre-calibration, this reference fails to fill the fundamental deficiencies in Bengtsson et al. and Rava et al.

Accordingly, the Applicants submit that the combined teachings of Bengtsson et al., Rava et al. and Lehman et al. fail to make Claims 7-11 unpatentable and as such respectfully request withdrawal of this rejection.

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CONCLUSION

In view of the remarks, this application is considered to be in good and proper form for allowance and the Examiner is respectfully requested to pass this application to issue.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078, reference no. 10992125-2.

Respectfully submitted,

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By:

Bret Field
Registration No. 37,620

AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, Colorado 80537-0599

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